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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,473	12/30/2003	Richard D. Breault	C-3020	7083
759	01/25/2006		EXAMINER	
Malcolm J. Ch			YUAN, DA	AH WEI D
220 Main Street P.O. Box 278			ART UNIT	PAPER NUMBER
Lee, MA 0123	8		1745	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

				/,
		Application No.	Applicant(s)	:-
		10/748,473	BREAULT, RICHARD D.	
	Office Action Summary	Examiner	Art Unit	
		Dah-Wei D. Yuan	1745	
Period fe	The MAILING DATE of this communication or Reply	appears on the cover sheet w	ith the correspondence address	
WHI0 - Exte after - If NO - Faile Any	IORTENED STATUTORY PERIOD FOR REICHEVER IS LONGER, FROM THE MAILING ensions of time may be available under the provisions of 37 CFR SIX (6) MONTHS from the mailing date of this communication. Depriod for reply is specified above, the maximum statutory per ure to reply within the set or extended period for reply will, by stareply received by the Office later than three months after the material part of the	DATE OF THIS COMMUNI 1.136(a). In no event, however, may a iod will apply and will expire SIX (6) MOI atute, cause the application to become A	ICATION. reply be timely filed NTHS from the mailing date of this communication. BANDONED (35 U.S.C. § 133).	
Status				
1)	Responsive to communication(s) filed on	·		
2a)[_]	This action is FINAL . 2b)⊠ T	his action is non-final.		
3)□	Since this application is in condition for allow	wance except for formal mat	ters, prosecution as to the merits is	
	closed in accordance with the practice under	er <i>Ex part</i> e Quayle, 1935 C.). 11, 453 O.G. 213.	
Disposit	ion of Claims			
4)🖂	Claim(s) 1-7 is/are pending in the application	n.		
	4a) Of the above claim(s) is/are without	drawn from consideration.		
5)□	Claim(s) is/are allowed.			
-	Claim(s) <u>1-7</u> is/are rejected.			
_	Claim(s) is/are objected to.	dles election servicement		
8)[_]	Claim(s) are subject to restriction an	a/or election requirement.		
Applicat	ion Papers			
•	The specification is objected to by the Exam		_	
10)⊠	The drawing(s) filed on <u>30 December 2003</u> in			
	Applicant may not request that any objection to t	• , ,	, ,	
11)	Replacement drawing sheet(s) including the con The oath or declaration is objected to by the			
Priority	under 35 U.S.C. § 119			
	Acknowledgment is made of a claim for fore ☐ All b)☐ Some * c)☐ None of:		§ 119(a)-(d) or (f).	
	1. Certified copies of the priority docum			
	2. Certified copies of the priority docume			
	3. Copies of the certified copies of the papplication from the International Bur	-	received in this National Stage	
*	See the attached detailed Office action for a		t received.	
	oce the addition detailed embe detien for a	not of the coramon copies he	. 1000	
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Attachmer	nt(s) ce of References Cited (PTO-892)	4) Interview	Summary (PTO-413)	
2) Noti	ce of Draftsperson's Patent Drawing Review (PTO-948)	Paper No	(s)/Mail Date	
	rmation Disclosure Statement(s) (PTO-1449 or PTO/SB/ er No(s)/Mail Date <u>12302003</u> .	/08) 5)	Informal Patent Application (PTO-152)	

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<u>DIRECT ANTIFREEZE COOLED FUEL CELL POWER PLANT</u> <u>WITH PASSIVE WATER MANAGEMENT</u>

Examiner: Yuan

S.N. 10/748,473

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January 23, 2006

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 2. Claims 1-4,6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Condit et al. (US 6,419,891 B1) in view of Breault et al. (US 6,461,753 B1).

With respect to claim 1, Condit et al. teach a fuel cell power plant for generating power comprising at least one fuel cell having an electrolyte (62), an anode catalyst (64), a cathode catalyst (66), an anode support means, a cathode support means, a porous anode water transport plate (68) (anode cooler plate), an antifreeze solution, a porous cathode water transport plate (74) (cathode water management plate), and water support plates (separator plate) that are adjacent to the porous anode and cathode water transport plates and from a network of coolant channels for delivering the coolant to the water transport plates. See Column 9, Line 10 to Column 10, Line 18. However, Condit et al. do not teach or suggest the addition of a pressure control means for maintaining a positive pressure differential between the fuel stream and the antifreeze stream. Breault et al. teach a fuel cell that uses an antifreeze solution to remove heat from the fuel cell. The fuel cell further include a pressure control means in fluid communication with cooler plate for maintaining a positive pressure differential between the process oxidant and reducing fluid

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reactant streams passing through the fuel cell within the anode and cathode flow fields. See

Column 5, Lines 13-65. Therefore, it would have been obvious to one of ordinary skill in the art
to include a pressure control means onto the fuel cell power plant of Condit, because Breault et
al. teach the use of such pressure control means to maintain a positive pressure differential
between the process oxidant and reduce the fluid reactant streams passing through the fuel cell.

With respect to claim 2, Condit et al. teach the fuel cell power plant further comprising a coolant feed line (38) and a coolant discharge line (40), a coolant pump (42), a coolant heat exchanger (44) (radiator), an oxidant saturator (172) (coolant evaporator). See Figures 1 and 3, Column 8, Lines 1-26, Column 15, Line 52 to Column 16, Line 31.

With respect to claim 3, Condit et al. teach the fuel cell power plant further comprising an oxidant discharge line (40), an oxidant recycle line (48) and an oxidant saturator (172) (coolant evaporator). See Column 8, Lines 1-26.

With respect to claim 4, Condit et al. teach the fuel cell power plat further comprising a coolant channels (90) (water management channel) defined within the cathode water transport plate (74) (cathode water management plate) to extend between the coolant heat exchanger (a condensation zone) to the oxidant saturator (an evaporation zone). See Column 9, Line 61 to Column 10, Line 18.

With respect to claim 6, Condit et al. teach the fuel cell power plant further comprising a plurality of fuel cells to form a cell stack assembly enclosed within a frame structure. See Column 8, Line 62 to Column 9, Line 8. The fuel cell power plant further comprises water support plates (separator plate) that are adjacent to the porous anode and cathode water transport

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plates and from a network of coolant channels for delivering the coolant to the water transport plates as shown in Figure 2 of Breault et al.

With respect to claim 7, Condit et al. teach the cathode support means may be wetproofed depending o performance requirements of the cell. See Column 9, Lines 30-45.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Condit et al. (US 6,419,891 B1) in view of Breault et al. (US 6,461,753 B1) as applied to claims 1-4,6,7 above, and further in view of Breault et al. (US 6,416,892 B1).

Condit et al. and Breault et al. disclose a fuel cell power plant as described above in Paragraph 2. However, Condit et al. and Breault et al. do not disclose the use of a cooler plate peripheral edge seal. Breault ('892) teach the use of edge seals (106,108) to restrict the movement of the process oxidant or exhaust stream through the perimeter of the porous body. See Column 10, Lines 10, Lines 1-62. Therefore, it would have been obvious to one of ordinary skill in the art to add a cooler plate peripheral edge seal between the anode cooler plate and the separator plate, an edge seal between the separator plate and the anode support means and an edge seal disclosed by Breault ('892), because Breault teach the use of edge seal to restrict the movement of the fluid through the perimeter of the porous body in the fuel cell system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan January 23, 2006

> DAH-WEIYUAN PRIMARY EXAMINER